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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,166	02/20/2004	Timothy A. Estes	31662-1001	7172

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EXAMINER

VERBITSKY, GAIL KAPLAN

ART UNIT PAPER NUMBER

2859

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,166	<b>Applicant(s)</b> ESTES ET AL.	
	<b>Examiner</b> Gail Verbitsky	<b>Art Unit</b> 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 23-36 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-14 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (U.S. 5942432) [hereinafter Smith] in view of Dunn et al. (U.S. 5324481) [hereinafter Dunn].

Smith discloses in Figs. 1-3 an apparatus (thermal cycler) comprising a (single) circular sample chamber/ carrier/ carousel; an opening/ manifold 109 in the center of the chamber for admission of heated/ cooled pressurized (compressed) fluid (gas or air) 105, a plurality of samples 101 in sample wells (mounts) for holding (receiving) samples, wherein varying temperature of the fluid influences (vary) the temperature of the samples. The sample mounts are evenly spaced. It is inherent, that such a positioning allows the samples to receive a uniform flow of air from the opening. The samples subsequently heated and cooled. The device comprises a heater and a cooler (col. 8, line 50) sequentially cycling the samples between at least two selected first and second temperatures (col. 1, lines 59-60), wherein the fluid is heated or cooled (col. 2, lines 62-63). As shown in Fig. 3, if to look from the bottom of the samples 129, there is no impediment of said heat/ fluid flow (shown in arrows) between the bottoms of any two adjacent samples.

Smith does not explicitly teach that the samples are circularly arranged around the opening, as stated in claim 1, with the remaining limitations of claims 1-14.

Dunn discloses in Figs. 7 a device comprising a carousel carrier (single sample chamber) 30 having receptacles (sample mounts/ slots) for holding samples. The device comprises a control panel, a microprocessor, a switchable power supply (network), a printer and a computer, a heating plate/ heating block 32, 26 wherein a warm air 33 going from the heating plate 32 through the deflector ring 138 and hub 126 upward and outward (radially) the carousel to heat the sample circularly arranged around the opening (entire col. 7), wherein the hub 126 with the deflector 138 positioned centrally in the opening to deflect the air from the plate 32 upwardly and outward (radially) towards the samples. Such a design provides a uniform airflow to the samples.

Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to modify the device disclosed by Smith, so as to have the samples circularly spaced around the opening, as taught by Dunn, so as to improve uniformity of heat/ cold distribution among the samples by allowing the equal distance between the samples and the source of the fluid, and thus, minimizing heat loss by traveling a longer distance to more peripheral samples.

With respect to claims 2, 3: having temperature lower or higher than an ambient temperature, as stated in claims 2 and 3 respectively, absent any criticality, is only considered to be the "preferred" or "optimum" temperature that a person having ordinary skill in the art at the time the invention was made would have been able to determine

using routine experimentation based, among other things, on the type of the samples, etc. See In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claims 7-9: cooling to a temperature lower than a desired low temperature, and heating to a desired low temperature and heating to a desired high temperature, as stated in claims 7-9, absent any criticality, is only considered to be the “preferred” or “optimum” temperatures that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the type of the samples, etc. See In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claims 5: the use of the particular kind of air, dried, as stated in claim 5, absent any criticality, is only considered to be the “optimum” cooling/ heating material/ / media/ fluid that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the probe element disclosed by Smith since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

3. Claims 1, 4, 10-16 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hanners et al. (U.S. 6040691) [hereinafter Hanners].

Hanners discloses in Figs. 2-3 a device/ thermal testing apparatus to test one or more samples (electronic components), the device comprising a single chamber 24, an opening (cylindrical support member) 56 in the middle of the chamber for introduction

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cool air (fluid) through the slots 116 and removing heated air (fluid) through the slots 118 and a pump 32 (col. 8, lines 1-11). The IC 75 and power conversion are acting a heater (col. 7, lines 64-67). As shown in Fig. 3, the air is affecting samples (comprising daughterboards 75) 50 symmetrically (evenly spaced) positioned on mounts (electrical connectors/ slots) 52 around the opening 56. It is inherent, that the cooling/ heating vary the temperature of the samples. Such positioning of the samples would imply that the samples to receive a uniform flow gradient of cool air from the slots 116 or alternately, from the opening 56, and there is no impediment (deflectors, etc.) of the flow between any two adjacent samples. The device comprises a host computer 26 and data acquisition including memory and a bus 16 (switching network communicating with the computer 26).

4. Claim 5 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hanners et al. (U.S. 6040691) [hereinafter Hanners].

Hanners discloses the device as stated above.

Hanners does not explicitly teach the air is dry, as stated in claim 5.

With respect to claims 5: the use of the particular kind of air, dried, as stated in claim 5, absent any criticality, is only considered to be the "optimum" cooling/ heating material/ / media/ fluid that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the probe element disclosed by Hanners since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a

known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

5. Claims 20-22 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hanners in view of Birch et al. (U.S. 5701667) [hereinafter Birch].

Hanners discloses the device as stated above.

Hanners does not explicitly teach the limitations of claims 20-22.

Birch discloses in Figs. 1-7 a device for testing of about six test coupons (samples) 74 comprising nets comprising daisy-chain (col. 8, lines 56-57) of vias 112. The device also comprises a data acquisition system. The device also comprises a heater (current) and fans 64 to cool the test coupon (cooling an air/ fluid around the test coupon) after heating by pulling air inside/ outside a cabinet (chamber) 44. The cooling/ blowing air can cool the test coupon to about (lower/ higher) an ambient temperature (col. 6, line 11). There is a switching network (controller) 60 multiplexing (switching) access of a microvoltmeter 52 so as to read a voltage drop across every coupon. The controller 60 also operates to control switching of the fans 64. The controller 60 is connected to a computer 26 and receives signals from the computer 26 via bus 42 (Fig. 4) also controlling the amount of heat (current) to the test coupons. Vias 115 serve as electrical conductive connectors for mounting the coupons to a board 127 (col. 9, line 67, col. 10, and line 1). Thus, sample mounts comprises electrical connectors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Hanners, so as to use it for testing test coupons comprising daisy-chain of vias, as taught by Birch, because

such a device also needs to be tested by heating and cooling, as already suggested by Birch, in order to provide the operator with accurately tested vias being able to correctly transmit right data.

6. Claims 17-19 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hanners in view of Blumenau (U.S. 5506510).

Hanners discloses the device as stated above.

Hanners does not explicitly teach an ohmmeter with the remaining limitations of claims 17-19.

Blumenau discloses a device/ tester wherein; switching matrix connections (network) includes an ohmmeter to determine if there is a short circuit between connections.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Hanners, so as to have an ohmmeter with a switching network, as taught by Blumenau, so as to test if there is a potential short circuit between connectors, and thus, to provide the operator with a correct testing data.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1- 22 have been considered but are moot in view of the new ground(s) of rejection.

With respect to Smith and Dunn: Applicant states that Dunn teach that the carousel rotates but not for the uniformity of airflow purposes. Applicant states that there is barriers that prevent air flow being uniformly distributed over the samples. This



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argument is not persuasive because, A) such a symmetrical structure having symmetrical components and barriers, still would permit symmetrical, thus, equal, thus, uniform distribution of air between the samples, B) in the rejection on the merits, the Examiner uses Dunn as a secondary reference, for its teaching that the samples can be arranged radially/ symmetrically around the hub.

Applicant states that “uniform airflow of Smith would be changed by adding the air flow scheme of Dunn”. This argument is not persuasive because, in the rejection on the merits, the Examiner does not modify the airflow scheme of Smith. The Examiner simply uses Dunn for more symmetrical positioning of the samples. In both, Smith and Dunn, the air comes from below, thus, the airflow scheme would not be changes by redistributions of the samples around the opening, which could be made by simply eliminating the central samples.

With respect to Hanners: Applicant states that in Hanners, the airflow is used to cool the samples, that Hanners does not teach the use of heater to vary the temperature of the samples. This argument is not persuasive because the Applicant does not claim a heater. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

In claim 1, the Applicant claims, “the fluid varies temperature of the one or more samples”. In Hanners, the fluid, when it cools the samples, also varies the temperature of the samples. For example, when the samples have very high temperature, the airflow would decrease (vary) the temperature to a desired low temperature.

Applicant states that in Hanners, the airflow is provided through the slots 18, not “through the opening around which the samples are arranged”. This argument is not

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persuasive because this limitation is not stated in claim 1. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable.

Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Also, Hanners states that cool air enters (introduced) through the openings/ slots 116; the heated air is removed by the slots (openings) 118 for entering (introduction) the cylindrical support member (opening) 56 through the slots 18 (col. 8. lines 1-3). However, the cool air can be introduced through the cylindrical support member (col. 8. lines 7-10) and then exit through the slots 118 and 116. This would imply that the support member 56 serves for introduction of the air, as claimed by applicant in claim 1, line 5.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GKV

Gail Verbitsky  
Primary Patent Examiner, TC 2800



February 24, 2006